

Before the  
**Federal Communications Commission**  
Washington, D.C. 20554

In the Matter of	)	
	)	
Flexibility for Delivery of Communications by	)	IB Docket No. 01-185
Mobile-Satellite Service Providers in the 2 GHz	)	
Band, the L-Band, and the 1.6/2.4 GHz Band	)	
	)	
Amendment of Section 2.106 of the Commission's	)	ET Docket No. 95-18
Rules to Allocate Spectrum at 2 GHz for Use By	)	
the Mobile-Satellite Service	)	

**FURTHER COMMENTS OF  
THE BOEING COMPANY**

The Boeing Company ("Boeing"), by its attorneys, hereby responds to the Commission's *Public Notice* requesting additional technical comment regarding proposals to provide ancillary terrestrial services ("ATC") in certain spectrum allocated to the Mobile Satellite Service ("MSS").<sup>1</sup>

**I. INTRODUCTION**

In its *Public Notice*, the Commission requests detailed, technical discussion regarding a series of questions that explore whether it is "technically feasible" for terrestrial operators to provide wireless services in MSS spectrum that are "severed" from the operations of MSS networks in the same frequency bands.<sup>2</sup> In responding to these questions, Boeing urges the

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<sup>1</sup> See Public Notice, *Commission Staff Invites Technical Comment on the Certain Proposals to Permit Flexibility in the Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-band, and the 1.6/2.4 GHz Band*, DA 02-554 (March 6, 2002) ("Public Notice").

<sup>2</sup> *Id.* at 2.

Commission to focus on the significant technical concerns that Boeing raised in its October 19, 2001 comments regarding the proposed introduction of ATC services in 2 GHz MSS spectrum. Although Boeing has not attached to the instant comments a detailed technical annex that is directly responsive to the questions posed in the Commission's *Public Notice*, Boeing intends to provide such a technical analysis on an *ex parte* basis within a short period.

## **II. THE COMMISSION MUST ADOPT RULES THAT ENSURE THAT 2 GHz MSS NETWORKS ARE PROTECTED FROM HARMFUL INTERFERENCE.**

As the Commission acknowledged last fall in its *NPRM*, permitting terrestrial services in MSS spectrum “will require protection of adjacent channel and intraband operations, restrictions on tower heights and transmit powers, and frequency stability.”<sup>3</sup> In an effort to meet these requirements, the Commission proposed to adopt certain technical restrictions on terrestrial services. The Commission acknowledged, however, that its proposed rules were “generally the minimum standards necessary to avoid harmful interference.”<sup>4</sup>

Boeing responded by filing detailed technical comments that explained its serious concerns that both in-band and out-of-band interference could result from terrestrial operations in 2 GHz MSS spectrum.<sup>5</sup> Boeing also believes that the operations of Boeing's 2 GHz MSS terminals in the 1990-2025 MHz uplink band would cause harmful interference to terrestrial terminals operating in adjacent spectrum. A number of other licensees, operators and consumers

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<sup>3</sup> *In the Matter of Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band*, Notice of Proposed Rulemaking, FCC 01-225, ¶ 34 (Aug. 17, 2001) (“*NPRM*”).

<sup>4</sup> *Id.*, ¶ 54.

<sup>5</sup> *See Comments of The Boeing Company*, IB Docket No. 01-185, ET Docket No. 95-18, at Appendix 1 (Oct. 19, 2001).

of satellite communications services filed their own comments echoing these interference concerns.<sup>6</sup>

The comments of Boeing and other parties demonstrated that the Commission's proposed technical restrictions were insufficient. Boeing urged the Commission to refrain from authorizing any terrestrial services in the 2 GHz MSS band unless and until adequate technical restrictions are adopted to ensure that 2 GHz MSS networks are protected from harmful interference. The Commission should also conclude that terrestrial terminals operating in the 1990-2025 MHz uplink band must accept harmful out-of-band interference from 2 GHz MSS networks.

In an effort to help resolve the ATC issues expeditiously, Boeing is holding intensive discussions with ICO Global Communications ("ICO"), one of the main proponents of terrestrial operations in the 2 GHz MSS band. Boeing has also carefully reviewed the technical submissions that ICO has provided to the Commission addressing the interference issues.<sup>7</sup> This process has been technically productive, but it has not yet resolved Boeing's previously stated

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<sup>6</sup> See also Comments of Aerospace and Flight Test Radio Coordinating Council, IB Docket No. 01, 185, ET Docket No. 95-18, at 1-2 (Oct. 19, 2001); Comments of Aviation Industry Parties, IB Docket No. 01, 185, ET Docket No. 95-18, at 1-2 (Oct. 19, 2001); Comments of Telenor Broadband Services AS, IB Docket No. 01, 185, ET Docket No. 95-18, at 6 (Oct. 19, 2001); Comtech Mobile Comments, IB Docket No. 01, 185, ET Docket No. 95-18, at 2 (Oct. 19, 2001); Comments of Kitcomm Satellite Communications, IB Docket No. 01, 185, ET Docket No. 95-18, at 3 (Oct. 19, 2001); Comments of Mobile Satellite Users Association, IB Docket No. 01, 185, ET Docket No. 95-18, at 5 (Oct. 19, 2001); TMI Comments, IB Docket No. 01, 185, ET Docket No. 95-18, at 3 (Oct. 19, 2001); Constellation Comments, IB Docket No. 01, 185, ET Docket No. 95-18, at 3-4 (Oct. 19, 2001); Globalstar Bondholders Comments, IB Docket No. 01, 185, ET Docket No. 95-18, at 31 (Oct. 19, 2001); Comments of Inmarsat Ventures, IB Docket No. 01, 185, ET Docket No. 95-18, at 12 (Oct. 19, 2001).

<sup>7</sup> See *Letter from Suzanne Hutchings, Senior Regulatory Counsel, ICO Global Communications (Holdings) Ltd., to William Caton, Acting Secretary, Federal Communications Commission* (Jan. 29, 2002); *Reply Comments of New ICO Global Communications*, IB Docket No. 01-185, ET Docket No. 95-18 (Nov. 13, 2001).

interference concerns. Boeing urges the Commission to encourage 2 GHz MSS licensees and ATC proponents to continue to hold cooperative discussions on the technical issues involved in consideration of ATC at 2 GHz. Boeing hopes that such efforts will lead to a mutually acceptable solution.

The Commission's *Public Notice*, however, does not appear to give adequate consideration to the interference issues that were raised by Boeing and other parties. The *Public Notice* includes the question: "what requirements are necessary for an integrated MSS ATC system to avoid adjacent channel and/or adjacent band interference?"<sup>8</sup> The more specific issue that the *Public Notice* implicitly seeks to address, however, appears to be: "how do the technical requirements that integrated MSS ATC systems must observe to avoid creating harmful interference differ from those that freestanding terrestrial mobile systems would have to observe?"<sup>9</sup>

Boeing is concerned about the Commission staff's apparent focus on the 'severed versus integrated' question. The Commission's deliberations on this issue could produce public policy decisions addressing the nature of terrestrial services, which could prejudice a determination regarding the restrictions that would be necessary to permit terrestrial services to exist at all in the 2 GHz MSS band. For example, if the Commission determines that, as a matter of public policy, terrestrial services should be permitted on a severed basis in MSS spectrum, it might result in significant pressure for the Commission to hold auctions for severed terrestrial licenses prior to determining whether such services would result in harmful and unacceptable interference to MSS networks.

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<sup>8</sup> *Public Notice* at 2.

<sup>9</sup> *Id.*

Boeing's concern is heightened by the fact that Boeing has designed its MSS network to provide critically needed communication, navigation and surveillance/ air traffic management ("CNS/ATM") services to the domestic and global aviation industries. Unless and until the Commission has adopted restrictions that mirror a resolution of the technical issues by ATC proponents and 2 GHz MSS licensees, any decision by the Commission to permit terrestrial services to operate co-frequency with Boeing's network would result in harmful interference to Boeing's aeronautical communication services. Boeing urges the Commission to focus on the requisite question of the interference limits that would be necessary to permit integrated ATC services to operate in 2 GHz MSS spectrum. Only when the Commission has adopted such limits would it be possible for the Commission to give any consideration to the more complicated question of whether terrestrial services could be severed from MSS licensees in MSS spectrum.

### **III. INDEPENDENT TERRESTRIAL SERVICES CANNOT BE PERMITTED TO OPERATE IN SPECTRUM THAT IS DESIGNATED NOW, OR IN THE FUTURE, FOR BOEING'S AERONAUTICAL COMMUNICATIONS SERVICES.**

Regardless of the other interference issues, the Commission must not permit independent, severed terrestrial services to operate co-frequency in spectrum assigned now or in the future for Boeing's aeronautical communications services. Harmful interference would result if the Commission permitted such severed terrestrial services to operate co-frequency with Boeing's CNS/ATM transmissions.

The significant potential for interference should come as no surprise to the Commission. Over a period of years, the Commission examined the spectrum sharing conditions in the 2 GHz band and concluded that 2 GHz MSS networks could not share spectrum with the incumbent

terrestrial services in the band.<sup>10</sup> The Commission directed 2 GHz MSS network operators to compensate incumbent terrestrial licensees for the costs of relocating to other spectrum segments. Having reached these sound technical conclusions, the Commission should not now reintroduce new interference problems to the 2 GHz MSS band. Because of the substantial potential for co-frequency interference generated by terrestrial transmitters, Boeing itself has no plans to introduce ATC in the spectrum that it will use for its aeronautical mobile, satellite-based air traffic control system. Nor should the ATC component of any 2 GHz licensee be allowed to operate co-frequency in bands used by Boeing's CNS/ATM system, at least until there is a resolution of the material technical issues, as Boeing has discussed above.

Furthermore, the Commission should affirm that severed terrestrial services will not be permitted to operate in spectrum designated now, or in the future, for Boeing's aeronautical communications services. As Boeing has made clear throughout this proceeding, Boeing requires slightly more than 8 MHz of paired spectrum to provide sufficient capacity for aeronautical use of its 2 GHz MSS network.<sup>11</sup> In the nearly five years that have passed since filing its 2 GHz MSS application, no party has disputed Boeing's spectrum requirements. Thus, while Boeing and other 2 GHz MSS licensees agreed to accept smaller spectrum assignments in their initial 2 GHz MSS authorizations, Boeing will require additional spectrum in order to develop successfully its proposed CNS/ATM services.

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<sup>10</sup> See, e.g., *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service*, FCC 00-233, ¶ 6 (July 3, 2000); *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service*, 12 FCC Rcd 7388 at ¶¶ 30, 42 (1997).

<sup>11</sup> See *Minor Amendment to Application of The Boeing Company*, File No. 90-SAT-AMEND-98 (20); IBFS File No. SAT-AMD-19980318-00021 (February 11, 1998) (describing Boeing's request for use of 8.25 MHz of 2 GHz MSS spectrum for uplink and 8.85 MHz of spectrum for downlink operations); *Letter from Bruce A. Olcott, Counsel to The Boeing Company to Magalie Roman Salas, Secretary, Federal Communications Commission* (Jan. 8, 1999).

Recognizing this need, the Commission should refrain from authorizing severed terrestrial services in any spectrum that may be needed for expansion by Boeing in the future. For example, the Commission should not authorize terrestrial networks to operate on a severed basis in spectrum assigned to unbuilt 2 GHz MSS networks because, as the Commission has repeatedly acknowledged, a significant likelihood exists that many of those 2 GHz MSS licensees will not be successful in deploying their proposed networks.<sup>12</sup> Both the Commission and Boeing have long anticipated that spectrum recovered from unsuccessful 2 GHz MSS licensees may be adequate to fulfill the spectrum requirements of Boeing and other successful operators.<sup>13</sup> Reassigning this spectrum for Boeing's use, however, will be made significantly more difficult if the Commission must also displace severed terrestrial networks that were authorized to operate in the same spectrum.

In light of the significant interference concerns that would result from co-frequency terrestrial networks, the Commission must not authorize any severed terrestrial operations in spectrum currently assigned for Boeing's aeronautical communications services. Further, the Commission should also refrain from authorizing any severed terrestrial operations in any spectrum in the 2 GHz MSS band, at least until Boeing's full request for slightly more than 8 MHz of paired spectrum has been accommodated.

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<sup>12</sup> *In the Matter of The Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band*, 15 FCC Rcd 16127, 16138 (2000) ("2 GHz MSS Order") (noting that while the Commission is "hopeful that all authorized systems will be built, we recognize that this might not occur").

<sup>13</sup> *See id.* (setting aside expansion spectrum for qualifying MSS operators equal to the entire share of one of the applicants and leaving open the possibility that spectrum recovered from failed licensees would also be available for 2 GHz MSS system expansion).

#### IV. CONCLUSION

The Commission should affirm that independent terrestrial services will not be permitted to operate in 2 GHz MSS spectrum that is assigned now or in the future for Boeing's aeronautical communications services. The Commission should also suspend any further deliberations on the possible nature of terrestrial services until adequate technical restrictions are adopted to ensure that terrestrial operations in the 2 GHz MSS uplink band do not cause harmful interference to 2 GHz MSS networks.

Respectfully submitted,

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